REMARKS

Status of Claims and Amendment

Upon entry of this amendment, which is respectfully requested, claims 1 and 15-20 will be amended. Claims 1-21 are all the claims pending in this application. Claims 10 and 12 are withdrawn from consideration as being directed to a non-elected invention.

Claim 1 has been amended to clarify that the step (b) of obtaining data is "to determine the computer model" for the pharmacodynamics of the drug in step (a), in response to a 112, indefiniteness rejection. Support for the amendments to claim 1 may be found in the claim itself.

Claims 15-20 have been amended to further clarify that the method comprises a step of administering at least a single dose of a drug to obtain data from the respective pre-clinical or clinical phase claimed. Support for the amendments to claims 15-20 may be found throughout the specification, for instance, at paragraph [09].

No new matter is added.

Withdrawn Rejection

Applicants thank the Examiner for withdrawal of the rejection under 35 U.S.C. § 101 for claims 1-14.

Response to Advisory Action

The Advisory Action indicates that upon the filing of an appeal, the Amendment filed August 24, 2009, will be entered and the status of the claims will be as follows:

Claims objected to: 1-9, 11 and 13-21

Claims withdrawn from consideration: 10 and 12

Specifically, the Examiner notes that the application is not in condition for allowance because claims 15-21 remain rejected under 35 U.S.C. § 101 for the reasons set forth in the previous Office Action and as discussed below. In addition, the newly recited claim limitations to claims 1-9, 11 and 13-21 raise new issues under 35 U.S.C. § 112, 2nd paragraph.

(1) 35 U.S.C. § 101

With regard to claims 15-21, the Examiner appears to assert that the method claims remain rejected because the method steps are not tied to any particular apparatus or machine, or meet the transformation test as set forth in *In re Bilski* 545 F.3d 943, 88 USPQ2d 1385 (Federal Circuit, 2008). The Examiner suggests amending the claims to recite, for example, performing the method steps in a "suitably programmed computer" to overcome this rejection.

The Examiner asserts that Applicants' arguments that although the presently claimed method involves a mathematical algorithm, the algorithm is used to transform the data obtained *in vitro* or *in vivo* from a pre-clinical or clinical phase to provide an optimal treatment protocol obtained by an interactive clinical design so that the claimed method meets the transformation requirement, was not persuasive. The Examiner disagrees with the characterization of the interview discussion regarding *In re Bilski*, and states that with regard to claim 1, the step of "performing a phase I clinical trial in which a clinical trial on at least a single dose of the drug of (a) is administered to at least one human" met the transformation requirement because of the physical step of "administering" a drug to a human patient. The Examiner asserts that there is no algorithm claimed that performs such a transformation step.

Additionally, the Examiner disagrees that *In re Bilski* does not apply to Applicant's invention, and that according to the Interim Examination Instructions for Evaluating Subject

Matter Eligibility Under 35 U.S.C. § 101, a claim to a process must pass the machine-or-transformation which ensures that the process is limited to a particular practical application.

With regard to claims 1-9, 11, 13, and 14, the Examiner asserts that Applicants' argument that the claimed method involves a practical application of the raw data obtained either *in vitro*, *in vivo*, or from actual small clinical trials to provide an optimum treatment regimen or clinical trial design for cancer treatment is moot because it is the physical transformation recited at step c) that meets the machine or transformation test. However, with respect to claims 15-21, the Examiner asserts that these claims fail to meet the machine or transformation test because neither a transformation nor a specific machine is recited. The Examiner states that the step of "obtaining data from pre-clinical trials" in claim 15, and of "obtaining data from performing a phase I clinical trial" in claim 16 is merely a step of gathering data. The Examiner states that performance of a clinical trial is not recited as being drawn to a physical step such as performing a phase I clinical trial wherein a dose-escalation study is performed on a human being (as in claim 1). The Examiner asserts that the specification outlines trials that are done *in silico* and the instant claims are interpreted in this manner.

In response, Applicants believe the Examiner has misunderstood the comments made by Applicants' representatives during the personal interview to pertain to only claim 1. Although the Examiner brought forth claim 1 during the interview as an example, it appears the Examiner took the arguments and amendments proposed to pertain only to claim 1 because, at the time, claims 15-21 did not specifically recite a step of performing a clinical trial on at least a single dose of drug administration, and the clinical trial is performed in parallel by performing computer simulations using a computer model. In this respect, and solely to compact

prosecution of the present application, claims 15-20 have been amended to further clarify that the claimed method comprises a step of administering at least a single dose of a drug to obtain data from the respective pre-clinical or clinical phases recited.

With regard to claim 16, Applicants note that claim 16 already recites that a dose-escalation is performed in parallel with simulated computer predictions. As acknowledged by the Examiner in the Advisory Action, "performance of a clinical trial is not recited as being drawn to a physical step such as performing a phase I clinical trial wherein a dose-escalation study is performed on a human being." Accordingly, the dose-escalation of claim 16 may only be done by physically administering a drug to at least one human being during phase I clinical trial. Nevertheless, and solely to compact prosecution of the present application, claim 16 has been amended to further clarify that the claimed method comprises a step of obtaining data from administration of a drug in a dose-escalation during phase I clinical trial performed in parallel with simulated computer predictions.

In addition, Applicants submit that as previously argued, the computerized *in silico* model and mathematical algorithm provide an *in silico* patient engine designed to provide optimal drug treatments because the *in silico* patient interacts with the clinical trial so that the *in silico* model is continuously validated and fine-tuned in order to provide an optimal treatment design (see pages 11-12 of Amendment filed October 24, 2008). As disclosed on page 19, 1st paragraph of the specification, "[d]uring dose escalation testing in the Phase-I trials, the computer model (in silico patient) interacts with the trial, predicting the results for ever step in the trial and, at termination of every step, is updated by implementing the observed effect and toxicity. In this way the computer model (in silico patient) is continuously validated and fine-

tuned, to give better predictions in the next step." Thus, the *in silico* model interactively guides the empirical research to reveal further necessary data. In this respect, the trial data is transformed using the *in silico* patient engine to provide an optimal treatment regimen because the further clinical studies are then designed based upon the predictions of the *in silico* model.

Accordingly, reconsideration and withdrawal of the rejection to claims 15-21 under 35 U.S.C. § 101 is respectfully requested.

(2) 35 U.S.C. § 112, Indefiniteness

Claims 1-9, 11, 13 and 14 are rejected under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite.

The Examiner asserts that the recitation in claim 1 that "obtaining data for the pharmacodynamics of the drug of (a)" is unclear as to whether the data are being obtained for the drug itself or for the model of the drug. Clarification through clearer claim language is requested.

In response, and solely to compact prosecution of the present application, claim 1 has been amended to recite that step "b) obtaining data [is] to determine the computer model for pharmacodynamics of the drug of (a) from *in vitro* studies of the effect of the drug in animal cells, and optionally, *in vivo* studies in animals, and obtaining data for the pharmacokinetics of the drug of (a) from *in vivo* studies in animals".

Claims 2-9, 11, 13 and 14 are directly or indirectly dependent on claim 1.

Accordingly, reconsideration and withdrawal of the rejection to claims 1-9, 11, 13 and 14 under 35 U.S.C. § 112, second paragraph, is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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